

Remarks

Claims 2-3 are currently pending in this application. Claim 1 has been cancelled.

Claim 2 is directed to a metalworking lubricant composition. The lubricant composition contains at least one lubricating oil and at least one based catalyzed branched reaction product comprising the reaction product of a compound of formula 1 as defined and at least one alkoxyated compound of the formula $R^2X(AO)_nY$ wherein Y is an organic group having from one to 36 carbon atoms; X is oxygen, sulfur or NR^3 wherein R^3 is a hydrocarbon or a C_1 - C_{18} alkyl group, AO is independently an ethyleneoxy, 1,2--propyleneoxy, or 1,2-butylenoxy group and n is a number from 0 to 200; and y is hydrogen, a mercapto group or an amino group or a C_1 - C_6 alkylamino group in place of a terminal -OH group, provided that when Y is mercapto or an amino group, or a C_1 - C_6 alkylamino group, n is at least 1; wherein the mole ratio of the linking component a) to b) is from 0.1:1 to 5:1. The metalworking lubricant composition has reduced foaming properties in aqueous and non-aqueous formulations. Applicants respectfully submit that the prior art references cited by the Examiner neither teach nor suggest the present invention.

Claim 2 stands rejected under 35 U.S.C. 102(b) as anticipated by Wiggins (U.S. 6,387,962). Applicants respectfully submit that Wiggins neither teaches nor suggests the present invention.

Wiggins is directed to polymer latexes and a latex paint with low foaming properties containing a base catalyzed reaction product of epichlorohydrin with an alkoxyated alcohol. Preferably, the reaction product of epichlorohydrin and the alkoxyated alcohol is introduced into the latex formulation in a mixture with water or a water-insoluble liquid carrier capable of dissolving or dispersing the reaction product. In a preferred embodiment of the invention, the reaction product is introduced into the latex paint in a formulation containing a hydrophobic solid and a water-insoluble liquid carrier capable of dissolving or dispersing the reaction product. The water-insoluble

liquid carrier can be an oil-like component, however, the composition is not utilized as an oil-like material except for introducing the reaction product and the hydrophobic solid into the latex formulation.

There is neither teaching nor suggestion that the composition would be useful as a metalworking lubricant or that the metalworking lubricant would have reduced foaming tendencies in an aqueous or non-aqueous formulation.

Applicants respectfully submit that there is neither teaching nor suggestion in Wiggins of a metalworking lubricant or a metalworking lubricant which has reduced foaming properties in an aqueous or a non-aqueous formulation.

Applicants submit that to be a reference on which a rejection under 35 U.S.C. 102(b) can be based, the reference must show each and every limitation in the claims. Clearly, Wiggins does not disclose a metalworking composition or a metalworking composition with reduced foaming tendencies whether in a non-aqueous or an aqueous formulation. Since Wiggins neither teaches nor suggests a metal-forming lubricant composition, Applicants respectfully submit that the rejection under 35 U.S.C. 102(b) is improper and respectfully request that the rejection be reconsidered and withdrawn.

Claim 3 is directed to an aqueous electroplating composition containing the base catalyzed reaction product of the invention which is not an epoxy functional reaction product. The reaction product of the invention is an anti-foam agent. The limitation to the lack of epoxy functionality in the reaction product is shown in the examples wherein the reaction product is formed by reacting the epoxy functionalized compound with the alkoxyated alcohol amine or thiol until the reaction mixture shows no epoxy functionality. Applicants respectfully submit that the prior art cited by the Examiner neither teaches nor suggests the present invention.

Claim 3 stands rejected under 35 U.S.C. 102(b) as anticipated by Kaylo (U.S. 6,290,830). Applicants respectfully submit that Kaylo is not a reference upon which a rejection under 35 U.S.C. 102(b) can be based.

Kaylo discloses electrodepositable coatings, aqueous rinsing systems for treating

electrocoated substrates and processes related thereto. The invention disclosed in Kaylo is directed to a novel antimicrobial agent which when added to the electrodeposition bath does not adversely affect the coating and provides a substantially smooth film.

The Examiner states "Kaylo teaches an aqueous electrodepositable composition (column 1, lines 21-23) comprising a film-forming material (column 5, line 66 through column 6, line 5). The disclosed-film-forming material contains epihalohydrins reacted with polyhydric alcohols in a base catalyzed reaction (column 8, lines 53-58). It is the examiner's position that the epihalohydrins and polyhydric alcohol fall within the scope of formulas I and II in the present claim."

Applicants respectfully request that the Examiner reconsider the teachings of Kaylo. The reaction product disclosed in Kaylo is a film-forming material which contains at least one epoxy or oxirane group in the molecule, such as di- or polyglycidyl ethers of polyhydric alcohols. Preferably the epoxy-functional material contains at least two epoxy groups per molecule. Useful polyglycidyl ethers of polyhydric alcohols can be formed by reacting epihalohydrins such as epichlorohydrin, with polyhydric alcohols such as dihydric alcohols in the presence of alkali condensation and dehydrohalogenation catalyst such as sodium hydroxide or potassium hydroxide. (Column 8, line 49 - 53).

Applications respectfully submit that the claims as presently amended, require that the reaction product of the present invention be substantially non-epoxy functional. That is, there are no free epoxy groups in the reaction product useful as the anti-foaming agent in the present invention.

There is neither teaching nor suggestion in Kaylo that the film-forming materials have any anti-foaming properties. Since the film-forming materials useful in the practice of the Kaylo invention contain reactive groups, and there is neither teaching nor suggestion that the materials have any anti-foaming action, Applicants respectfully submit that a rejection under 35 U.S.C. 102(b) over Kaylo is untenable and respectfully

request that the rejection be reconsidered and withdrawn.

In addition to the requirement that the reaction product useful in Kaylo be a film-forming, epoxy-functional, curable composition, the reference discloses that the electrodepositable coating composition can be leaded. Applicants do not understand what leaded means in the context of the Kaylo disclosure since Kaylo teaches at column 10, lines 59-69:

"Preferably the electrodepositable coating composition is essentially free of metallic materials. "Essentially free of metallic materials" means that the electrodepositable coating composition contains no additional water soluble inert ingredients in the form of metallic materials, for example metal salts such as magnesium chloride, magnesium nitrate or cupric nitrate."

In the context of the above statement in Kaylo, Applicants do not understand the nature of the leaded film-forming composition unless, the leaded composition is not ionizable or the lead is present in the metallic form enshrouded in the film-forming composition. At column 2, lines 8-10, Kaylo states:

"The presence of metal ions of these salts in electrodeposition systems is undesirable because the metals cause coating defects such as gas generation at the cathode."

The statements in Kaylo at column 2, column 10 and column 12 clearly teach that the electrodepositable coating bath disclosed in Kaylo does not contain extraneous metal ions.

Since Kaylo et al utilizes an epoxy functional film-forming resin which is polymerized after coating on a substrate and the electrode deposition bath is metal ion free, Applicants respectfully submit that Kaylo would neither teach nor suggest the present invention. Applicants respectfully submit that to be a proper reference on which a rejection under 35 U.S.C. 102(b) can be based, the reference must teach every limitation in the claim. Clearly, Kaylo et al. fails as a reference upon which a valid rejection under 35 U.S.C. 102(b) can be based in that it neither teaches nor suggests foam control in an aqueous electroplating composition nor the addition to the

electroplating composition of the reaction product of a chlorohydrin and an alkoxyated alcohol form a composition which is not epoxy functional. That is, there is not sufficient epoxy groups remaining in the composition to provide the cross linking required in the film-forming composition disclosed in Kaylo.

Applicants further submit that the reaction product foam-suppressing additive of the present invention is neither taught nor suggested by Kaylo. Applicants therefore respectfully request that the rejection of claim 3 under 35 U.S.C. 102(b) over Kaylo be reconsidered and withdrawn.

Claim 2 stands rejected under 35 U.S.C. 103(a) as unpatentable over Larsen (U.S. 2,375,007) in view of Dones (U.S. 6,540,942). Applicants respectfully submit that Larsen and Dones, whether considered alone or in combination neither teach nor suggest the present invention.

Larsen discloses the use of certain silicone and organic silicate oligomers as anti-foaming agents for reducing the foaming tendency of oils and particularly oils used in aircraft or other fueled engines and in semi-refined hydrocarbon compositions. The disclosure is specific to the particular classes of silicones and silicates described. The specification teaches at page 2, right-hand column at lines 54-59 that other silicone compounds having different structures are not useful as the anti-foaming or foam depressing agents. Even the class of compounds which has been defined as useful anti-foaming agents for liquid hydrocarbon materials, can have different degrees of effectiveness depending upon the molecular weight of the oligomers utilized.

Applicants submit that the anti-foaming agent useful in the practice of the present invention is a surfactant material. Larsen discloses at page 1, right-hand column, lines 15-50 that detergents are generally considered as foaming agents rather than foam-reducing compositions in lubricating oil formulations. Applicants respectfully submit that the discovery that the surfactant components useful in the practice of the present invention are foam-reducing compositions in both lubricating oils and in aqueous dispersions of oils is unexpected in view of the teachings of Larsen.

The deficiencies in Larsen are not cured by combination with Dones. Dones discloses a polymerizable coating composition containing the reaction product of epichlorohydrin and an alkoxylated alcohol as a reduced foaming composition. However, the hard coating polymerizable composition containing the reaction product of epichlorohydrin and an alkoxylated alcohol is not a lubricating composition and one skilled in the art would expect that the composition has substantially different properties from a lubricating oil. Applicants respectfully submit that there would be no teaching nor suggestion that the Dones' defoaming agent would have any utility in the lubricating oil composition disclosed in Larsen. The polymerizable hard coating composition disclosed in Dones is not a lubricating oil composition and has substantially different properties from such a lubricating composition.

To be a proper rejection under 35 U.S.C. 103(a), there must be some teaching or suggestion in the combination of references to make the combination. In the present rejection, the Examiner is utilizing hindsight reconstruction of the invention utilizing the present application as an incentive for combining these references. Applicants submit that since there is neither teaching nor suggestion in either reference and no assurance that the inclusion of the reaction product of epichlorohydrin with an alkoxylated alcohol would have any utility in an oil composition, Applicants respectfully submit that the rejection is improper and request that it be reconsidered and withdrawn.

Larsen is directed to the art of lubricating oil compositions utilizing a defoaming agent comprising various silicon-containing oligomers. However, the specification clearly teaches that all silicon-containing compounds are not useful anti-foaming agents in the oil compositions.

In addition, Larsen teaches that surfactants cause foaming in lubricating oil compositions and require the addition of the silicon oligomers to overcome the foaming attributed to the presence of detergents in the oil formulation. Applicants submit that the teachings of Larsen would dictate against including a surfactant composition of Dones as an anti-foaming agent in an oil composition. Although Dones discloses that

the surfactant is useful for inhibiting the foam in a non-aqueous polymerizable resin composition, these materials are substantially different from the lubricating oil compositions which are the subject matter of the claims in the present application. Applicants respectfully submit that the combination of Larsen with Dones neither teaches nor suggests the present invention nor would assure anyone skilled in the art reasonable success in foam suppression of the lubricating oil by including in the lubricating oil the reaction product of epichlorohydrin with an alkoxyated alcohol. Applicants therefore respectfully request that the rejection be reconsidered and withdrawn.

Claim 3 stands rejected under 35 U.S.C. 103(a) as unpatentable over Kaylo (U.S. 6,290,830) in view of Dones (U.S. 6,540,942). Applicants respectfully submit that Kaylo and Dones, whether considered alone or in combination, neither teach nor suggest the present invention. Kaylo discloses an electrodeposition process utilizing an aqueous dispersion of an electrodepositable resin coating composition and an aqueous rinsing system for treating the electrocoated substrates. The invention upon which the Kaylo reference is based is that use of certain halonitroalkanes can have an antimicrobial effect on the electrodepositable aqueous composition and, in addition, provides a smooth electrodeposited polymerizable coating on the substrate being coated.

There is no mention in Kaylo et al. of any foaming problems which need to be overcome by the addition of an antifoaming agent to the electrodeposition bath. The only concern with foaming is the presence of metal ions in the aqueous suspension which can cause coating defects such as gas generation at the cathode where the electrode depositable coating is being formed (column 2, lines 8-10). Applicants therefore respectfully submit that Kaylo would teach one skilled in the art away from including an antifoaming or foam depressing agent in the electrocoating bath containing a polymerizable epoxy functional resin.

The deficiencies in the teachings of Kaylo in regard to foaming in the electrodeposition bath or any advantage in including a foam suppressing or foam

eliminating agent in the bath are not cured by combination with Dones. Dones is directed to a non-aqueous hard coating composition. The hard coating composition disclosed in Dones are compositions which provide hard coatings when cured and, in particular coatings which can be cured by ultraviolet radiation or by electron beam radiation. One of the coating compositions useful in the practice of the Dones' invention can include epoxy resin compositions which are thermosetting resins based on the reactivity of the epoxide group (column 3, lines 53-64). However, the reaction product of epichlorohydrin with an alkoxyated alcohol useful in the practice of the present invention does not contain sufficient number of reactive epoxy groups to form a durable resin coating. In addition, the reaction product acts as a flow modifier, slip additive, wetting agent for the pigment and dispersing agent for the pigments in the prior art coating compositions of Kaylo. Applicants respectfully submit that there would be no incentive to include an antifoaming agent in the Kaylo composition since there is no mention of a foaming problem in the electrodepositable coating bath disclosed in Kaylo.

In addition, there is neither teaching nor suggestion in Dones that the addition of the reaction product to the aqueous electrodepositable coating composition of Kaylo would provide any benefit in regard to foam control of the composition.

Applicants submit that the reactive coating composition disclosed in Kaylo is far different from the reaction product useful in the practice of the present invention. As presently claimed, the reaction product of the present invention is substantially epoxy free as shown in the examples wherein the reaction is carried out until an analysis of the reaction product shows that all of the epoxide groups have been reacted.

Since the compositions and the environment for use of the composition as disclosed in Kaylo and Dones are different and non-related, Applicants respectfully submit that there would be no suggestion to combine the teachings of Dones with the teachings of Kaylo to arrive at the present invention. This is particularly true in view of the fact that the Kaylo composition cannot tolerate the presence of metal ions.

Applicants therefore respectfully submit that a rejection of claim 3 under 35 U.S.C. 103(a) over the combination of Kaylo with Dones is untenable and Applicants respectfully request that the rejection be reconsidered and withdrawn.

Claim 3 stands rejected under 35 U.S.C. 103(a) as unpatentable over Kaylo in view of Dones and further in view of Deresh (U.S. 4,849,059). Applicants respectfully submit that Kaylo, Dones and Deresh, whether considered alone or in combination, neither teach nor suggest the present invention.

The deficiencies in the combination of Kaylo with Dones has been discussed in great detail above. The deficiencies in the combination of Kaylo with Dones is not cured by combination with Deresh.

Deresh discloses a particular tin, lead or tin-lead tall oil electroplating baths which produce little or no foam during electroplating. The bath is limited to use of tin and/or lead salts of alkane sulfonic acids, free alkane sulfonic acids, brightening agents and a defoaming agent. The defoaming agent is a critical composition comprising at least 5 components. A defoaming agent useful in the Deresh electroplating baths comprises a silicon and silica and/or silicate in polypropylene glycol, a first nonionic surfactant consisting of an ethoxylated arylphenol and a second non-ionic surfactant consisting of an ethoxylated short-chain alcohol. As set forth in the specification, the combination of the particular defoaming agent and the particular nonionic surfactants appear to be unique in producing tin and/or lead electroplating baths based on an alkane sulfonic acid electrolyte which can be operated at high speed plating conditions with little or no foam formation and without oiling out of the defoaming agent in the form of a film along the surface of the bath. The Deresh specification teaches that the combination of the two nonionic surfactant has the ability to disperse the three part defoaming agent throughout the electroplating bath and, in addition, aids in dispersing insoluble brightening agents throughout the plating bath. However, the anti-foaming agent is limited to a bath containing the alkyl sulfonates salts of the tin and/or lead being plated. As stated in Deresh, the composition is unique and their use in lead and

tin electroplating baths based on alkane sulfonic acid electrolytes is critical.

The Examiner states:

Deresh discloses that defoaming agents are an advantageous addition to an electroplating composition, as they reduce the foam formation, which can cause non-uniform plating (col. 1, lines 57-63). Therefore, the further addition of a defoamer to the electroplating composition disclosed in Kaylo would be advantageous. Since Dones discloses an excellent defoamer, it would be obvious to include this defoamer in the electroplating composition taught by Kaylo. Applicants respectfully request that the Examiner reconsider her understanding of the teachings of the combination of references.

Clearly, Kaylo does not disclose an electroplating bath as taught by Deresh. Kaylo is directed to an aqueous electrodepositable coating and a rinsing system for treating the electrocoated substrates. There is no mention of a foaming problem to be overcome in the electrodepositable coatings bath of Kaylo. Kaylo does not disclose a bath for electroplating a metal. Kaylo discloses a bath for electrodeposition of a resinous film-forming material which forms a curable coating on an electro conductive substrate. The bath does not contain metal ions which are deleterious to the operation of the electrodeposition bath. (Col. 10, lines 59-65; and col. 2, lines 8-10). Since the Kaylo bath does not contain metal ions, it is not similar to or equivalent to the electroplating bath disclosed in the present application and in Deresh.

Clearly, there is no indication in Kaylo that there is any problem with the generation of foam in the electrodeposition bath therein. Applicants submit that the electrodeposition bath which deposits a resin on the surface of a conducting substrate is far different than the electroplating operation disclosed in Deresh or the present application. Applicants therefore respectfully submit that there would be no incentive to include in the Kaylo electrodeposition bath an antifoaming agent to prevent a problem which apparently is not present. Applicants therefore respectfully submit that the present invention is not obvious over the combination of Kaylo, Dones and Deresh. Applicants therefore respectfully request that the rejection be reconsidered and withdrawn.

Claim 3 stands rejected under 35 U.S.C. 103(a) as unpatentable over Kaylo in view of Gross (U.S. 6,532,973). Kaylo and Gross, whether alone or in combination neither teach nor suggest the present invention.

Kaylo has been discussed in great detail above and is not related to an electroplating composition or process as set forth in the present application. The electrodeposition of a polymerizable resin is not the same or equivalent to an electroplating bath or process. This is particularly true in view of the disclosure in Kaylo that metal ions should be excluded from the bath.

The Examiner states:

"Discussion of Kaylo as set forth in paragraph 6 is incorporated here by reference where Kaylo discloses an electrodepositable composition of a polyhydric alcohol reacting with an epihalohydrin. However, the polyhydric alcohol is not substituted with a terminal amino or mercapto group."

Applicants respectfully submit that the Examiner is misinterpreting the teachings of Kaylo in regard to the reaction product of a polyhydric alcohol with epihalohydrin. The reaction product referred to by the Examiner is a curable resin which is deposited from the bath onto the surface of an electrically-charged conducting substrate. The reaction product has reactable epoxide groups which are reacted when the deposited coating is heated to cross-link and provide a hard, durable coating.

In contrast to the teachings of Kaylo, the present invention utilizes reaction products of a monohydric alcohol with epichlorohydrin which are reacted to the point wherein all the epoxide groups are consumed in the reaction. That is, the reaction product useful in the practice of the present invention is not a reactable polymerizable composition as required in the Kaylo reference.

The reaction product useful in the practice of the present invention is not the reaction product of epichlorohydrin with a polyhydric alcohol. The alkoxylated alcohol

useful in the practice of the present invention is a monohydric alcohol and bears no relation to the polyhydric alcohol useful in forming the polymerizable reaction product useful as the coating composition in the Kaylo reference.

In addition, since Kaylo teaches that metal ions should be excluded from the electrode depositable coating bath, one skilled in the art would clearly understand that the Kaylo et al. disclosure could not be related to the electroplating bath in which metal ions are critical to its operation.

The Examiner appears to have confused the term polyhydric alcohol which means that the alcohol contains more than one OH group, with the alkoxylated monohydric alcohol useful in the practice of the present invention which can be capped with a mercapto or an amine group. In addition, the reaction product of epichlorohydrin with the alkoxylated monohydric alcohol useful in the practice of the present invention is not the same and is not a polymerizable coating composition as required in the Kaylo reference.

The Examiner states that it would be obvious to replace the polyhydric alcohol reaction product disclosed by Kaylo by the substituted polyhydric alcohol taught by Gross for the advantages described by Gross. Applicants submit that the Examiner has confused the term "polyhydric alcohol" with the monohydric alkoxylated alcohol useful in the Gross disclosure. Applicants therefore respectfully submit that there would be no incentive teaching or suggestion to combine the reaction product disclosed in Gross with the electrodepositable coating composition disclosed in Kaylo. Applicants respectfully submit that the rejection is based on a false premise and therefore should be reconsidered and withdrawn. Applicants therefore respectfully request that the rejection of claim 3 over the combination of Kaylo with Gross, '973, be reconsidered and withdrawn.

Claim 3 stands rejected under U.S.C. 103(a) as unpatentable over Kaylo in view of Gross, '973, and further in view of Deresh (U.S. 4,849,059). Applicants respectfully submit that Kaylo, Gross '973 and Deresh, whether considered alone or in combination, neither teach nor suggest the present invention.

The Examiner's rejection is based on the premise (which is undisclosed) that the electrodepositable coating composition of Kaylo presents a foaming problem during operation of the process. Applicants submit that there is no mention in Kaylo of any problem with foaming during operation of the process. Applicants therefore respectfully submit that there would appear to be no advantage in introducing a defoaming agent into the Kaylo composition to reduce foaming since it could introduce a potential contaminant into the bath.


The rejection is also based on the premise or assumption that the epoxide functional polymerizable coating composition utilized in the Kaylo bath is the same or similar to the reaction product of epichlorohydrin with the monohydric alkoxyated alcohol useful in the practice of the present invention. Applicants respectfully submit that as set forth in the present application and in the claims amended, the reaction product is not an epoxide functional material.

Deresh discloses a particular defoaming composition which comprises at least 5 critical components. The defoaming agent is particularly useful in a particular plating bath which utilizes alkane sulfonate salts of tin or lead as the plating components. There would be neither teaching nor suggestion that the defoaming agent disclosed in Gross '973 would be useful in the Deresh composition or would be useful to cure the non-existent problem in the Kaylo process. Applicants therefore respectfully submit that the Examiner's rejection is based on a misunderstanding of the teachings of the references and must be reconsidered and withdrawn.

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In view of the amendments entered in the claims and the above discussion, Applicants respectfully submit that the application is in condition for allowance and favorable consideration is requested.

Respectfully submitted,


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